



Infrastructure · Water · Environment · Buildings

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Subject:

Response to Valmont comments on Pre-Design Work Plan
Reeves Southeastern Superfund Site Tampa, Florida

Dear Ms. Helton and Mr. Martin:

This letter is written in response to a letter sent to each of you by Mr. William R. Taylor of Valmont Industries, Inc., dated March 14, 2012, regarding the Pre-Design Work Plan (PDWP) for the Reeves Southeastern Superfund (Reeves) Site submitted to you by ARCADIS in November 2011. As we have discussed in recent telephone conversations, the Reeves Trust is anxious to begin remedial action for impacts related to the former Reeves Site operations. With your concurrence, we are moving forward with implementation of the Pre-Design work even though your formal reviews have not been completed. While we are taking action to address our obligations, we do feel compelled to respond to the letter and comments from Valmont Industries. To be clear, it is the position of the Reeves Trust that Industrial Galvanizers, a Valmont Industries company, began discharging zinc and other contaminants to soil, air, surface water, sediment, and groundwater in 1996 and these discharges have continued to present. The past and ongoing releases by Industrial Galvanizers have exacerbated the contamination caused by Reeves and have interfered with the effectiveness of the approved Site remedies. Valmont's comments are merely an attempt to shift focus away from their operations and cause the Trust to expend funds needlessly on unnecessary investigations.

ARCADIS has prepared the following response to address the IG comments.

Historical Industrial Operations and Related Contamination

Comment:

The facility currently operates within the allowed limits of its operating permits, including air and stormwater permits.

Imagine the result

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Response:

While the effluent discharge concentrations of zinc have decreased as a result of recent upgrades, 2010 and 2011 effluent discharge concentrations from the IG property have always exceeded the permit limit, and continue to exceed the permitted discharge concentration of 0.388 milligrams per liter (mg/L). As documented in the Zinc Assessment prepared by Environmental Consulting & Technology, Inc. (ECT) in October 2009, facility discharges from the facility were previously authorized by a National Pollutant Discharge Elimination System (NPDES) Multi-Sector General Permit (MSGP) under Sector AA Permit No. FLR05F844 effective on April 17, 2004, and expired on April 16, 2009; however, as notified by the Florida Department of Environmental Protection (FDEP), IG was not eligible for renewal of the permit due to exceedances of zinc, nitrate, and nitrite nitrogen in stormwater runoff samples at Outfall 001. The report documented rinse sampling with zinc concentrations significantly exceeding the surface water criteria.

Since expiration, IG has received a new permit (Permit # FLR05F844) to discharge stormwater and continue monitoring. The following table summarizes the historical and recent stormwater discharge monitoring report (DMR) sampling results.

Table 1 – Summary of Discharge Monitoring Report Sampling*

Monitoring Period	1Q	2Q	3Q	4Q	Average
2005	19	8.7	2	12.3	10.5
2007	NA	11.9	3.19	NA	7.55
2009	NA	4.03	0.18	NA	2.11
2010	1.01	NA	2.3	NA	1.66
2011	1.44	NA	0.863	NA	1.15

Notes:

All results are in mg/L.

NA = No rainfall or data not available

Bold = Exceeds IG MSGP zinc benchmark criteria of 0.117 mg/L

Shading = Exceeds MSGP benchmark criteria and FDEP Surface Water Criteria of 0.388 mg/L (based on maximum hardness of 400 mg/L)

*Data is from the 2010 IG presentation to FDEP and IG Discharge Monitoring Reports (DMRs).

Comment:

Reeves used sulfuric acid and some zinc ammonium chloride as part of their operation. IG uses hydrochloric acid. Accordingly, a release during Reeves' tenure would be evident due to an extensive amount sulfate and zinc in the groundwater, with some chloride. A release during IG's operation would result in a significant amount of chloride and zinc occurring in groundwater. Based on recent groundwater sample data collected by

Reeves, an extensive plume of sulfate and zinc is present in groundwater. Chloride was only minimally detected in groundwater across the Site. Sulfate and zinc levels were observed to be most highly concentrated in groundwater in the vicinity of the old, pre-1996 galvanizing facility and the closed evaporation ponds. This clearly indicates that these plumes in groundwater are a result of operations prior to 1996.

Response:

In order to establish a relationship between elevated metals in groundwater and elevated sulfate and chloride concentrations, baseline sulfate and chloride concentrations from an unimpacted monitoring well are necessary. Upgradient and historically unimpacted monitoring well S-5 has been used as a baseline comparison for background metals concentrations and pH previously. Analytical results for sulfate and chloride from historical samples collected at S-5 were 5.8 and 3.2 mg/L, respectively, in March 2006 and below method detection limits (MDLs) in August 2011. Monitoring well S-5 has no historical exceedances of dissolved metals and has a historical pH of approximately 6.5 standard units (s.u.).

In 2007, a number of direct-push technology (DPT) borings were advanced on the IG leased property, and groundwater samples were collected. The approximate locations of these DPT borings ranged from the center of the IG leased property to the northwest. The relevant sampling locations were DPT001, DPT002, DPT003, DPT016, DPT017, DPT018, DPT019, DPT020, DPT021, DPT022, DPT023, and DPT024. Approximately half of the analytical results from the 27 groundwater samples collected over variable depths from these 12 DPT sampling locations exceeded Performance Standards for cadmium, chromium, lead, nickel, and/or zinc. Exceedances were identified at 11 of the 12 locations, and an average pH of 4.1 s.u. was observed. The highest exceedances were observed at DPT016 from depths of 9 and 19 feet below ground surface (ft bgs) indicating 390 and 550 mg/L zinc, respectively. Chloride concentrations from DPT016 at depths of 9 and 19 ft bgs were 2,200 and 3,000 mg/L, respectively while sulfate was only slightly elevated at 350 and 620 mg/L.

This chloride to sulfate ratio is in direct disagreement with zinc exceedances observed at other locations north of the IG leased property (S-1, S-2, IGMW-1D, MW002D, and MW005D) in locations known to have been impacted by Reeves' previous operations. At these locations, chloride has ranged from 180 to 590 mg/L, sulfate has ranged from 1,600 to 4,200 mg/L, and zinc has ranged from 20.8 to 250 mg/L historically. Contrary to IGA's assertion, this demonstrates that while elevated metals concentrations to the north of the IG leased property are likely attributable to Reeves' previous operation evidenced by a larger sulfate to chloride ratio, impacts below the IG leased property are likely attributable to IG site processes as evidenced by a larger chloride to sulfate ratio.

General Comments**Comment:***Possible Presence of Contaminant Mass in Source Areas*

As described above, low pH contaminant mass is likely present within saturated zone soils beneath the former pond area and the old galvanizing facility. The contaminant mass is likely an ongoing source of the low pH and dissolved metals in groundwater that have been detected downgradient of these areas. Accordingly, IG recommends that a thorough characterization of saturated zone soils in these areas be performed in order to assess the concentration and extent of residual impacts within the source areas at the Site. Specifically, the investigation should include the following:

- Soil borings within the potential source areas to confirm mass concentrations and extent within the saturated zones.
- Collection and analytical testing of soil samples within the saturated zone in potential source areas.
- Characterization of hydrogeology and geochemistry within source areas.

Response:

The impacted matrix at the site is groundwater. Reduced pH and elevated metals concentrations in groundwater are understood to be a groundwater issue and not a soil issue. A soil investigation is not necessary and will not be completed.

As documented in the *Additional Characterization and In Situ Groundwater Treatment Pilot Study*, dated December 6, 2007, a thorough characterization of saturated zone groundwater has previously been completed through the installation of several soil borings installed in the vicinity of the former Reeves manufacturing building:

DPT016 – 9 ft bgs at 390,000 µg/L Zn (immediately west of former building); pH = 4.60

DPT016 – 19 ft bgs at 550,000 µg/L Zn (immediately west of former building); pH = 2.19

DPT020 – 19 ft bgs at 4,200 µg/L Zn (immediately north of former building); pH = 4.99

DPT021 – 14 ft bgs at 20,000 µg/L Zn (upgradient of former building); pH = 4.13

DPT022 – 12 ft bgs at 730 µg/L Zn (upgradient of former building); pH = 5.71

DPT023 – 9 ft bgs at 49 µg/L Zn (upgradient of former building); pH = 4.67

DPT023 – 19 ft bgs at 140 µg/L Zn (upgradient of former building); pH = 5.16

DPT024 – 12 ft bgs at 1,400 µg/L Zn (upgradient of former building); pH = 5.42

DPT025 – 13 ft bgs at 3,400 µg/L Zn (immediately north of former building); pH = 5.41

Please note that **BOLD** concentrations are above the Performance Standard of 10,000 µg/L. These are DPT samples and may be slightly elevated; however, we proposed a monitoring well (MW019S) in the former DPT016 location in the PDWP to confirm the detection at DPT016.

Comment:

Lack of Site Characterization to Identify Hydrogeologic Conditions

Investigative efforts to date have been insufficient to properly characterize the hydrogeologic conditions within the underlying saturated zones. An expanded investigation should be added to the work scope in order to provide the data necessary to better understand vertical gradients, contaminant migration pathways, and groundwater-surface water interactions at the Site and thereby assist with designing and implementing an appropriate, cost-effective groundwater remedy. Specifically, the investigation should include:

- *Installation of additional clustered wells (completed at different depths within the saturated zones) to evaluate vertical groundwater gradients and contaminant concentration profiles across the site.*
- *Extensive surface water and groundwater monitoring, sampling, and analysis during different seasons to evaluate the interactions between surface water and groundwater.*
- *Expanded geophysical evaluations across the entire Site to evaluate the bedrock surface profile.*

Response:

As documented in the PDWP, additional clustered wells are proposed to assess vertical gradients and the surface water/groundwater interface. Semi-annual sampling has been performed for the last several years and can be used to provide seasonal fluctuation data; however, a complete baseline sampling event that includes all wells associated with the discharge has also been proposed. The geophysical evaluation is being performed in the areas downgradient from the former lagoons, source area for OU2, and will not be further expanded.

Comment:

Conduct Pilot Studies in Former Source Areas

The effectiveness of groundwater remediation using calcium polysulfide is highly dependent on pH. An attempt was made during the FFS to inject bicarbonate into the aquifer to increase the pH. The pH initially increased in all wells, but gradually returned to near original conditions after approximately 30 days. This indicates that the source of low pH water was located upgradient of the injection zone and was not treated by the

injections. Why were the potential source areas not targeted for injection? Pilot testing in source areas is an integral part of any FFS?

Response:

As documented in the PDWP, other pH adjustment chemicals are being evaluated to determine the most amenable remedial alternative. The source areas are the lagoons, which were excavated and remediated. The areas that will not "naturally attenuate" are the Transition Zones, which have been and are being targeted for pilot testing. Based on the most recent sampling events, groundwater samples from MW009 report the highest concentrations of zinc. This area is also outside the previous pilot test area, and has similar lithologic conditions. Therefore, the location of MW009 was selected for an evaluation of this remedial alternative.

Specific Comments

Comment:

Page 1, 3rd Paragraph, 4th Sentence. Explain what "swale lining and armoring" will entail.

Response:

The potential for impacted groundwater to discharge to surface water will be an area of investigation during the pre-design effort. In the event that groundwater is confirmed to be impacting surface water, an impermeable liner may be placed in the bed of the shallow drainage swales to prevent the groundwater discharge.

Comment:

Page 2, 3rd Paragraph, 5th Sentence. Numerous assertions have been made in this and other documents prepared for Reeves that surface water from upgradient industrial operations (including IG) represents the most significant ongoing source of zinc to the environment. According to data from numerous investigations of the Site, there were substantial historical contributions to Site impacts that occurred prior to IG's presence. IG is in compliance with all environmental permits for the Site. Any minuscule contribution from stormwater that may have occurred would have been minuscule compared to the historical impacts. Accordingly, Reeves should remove this, and all similar statements from all documents related to the Site.

Response:

The total contribution from IG to surface water and groundwater impacts has not yet been defined. As noted above, IG has never been able to comply with the discharge limits of its stormwater permit and is continuing to discharge zinc and other metals to the

environment surrounding the Site. Reeves remains responsible for the remediation of its known impacts. However, IG will be responsible for their ongoing contribution, which has been documented in the discharge sampling performed by IG.

Comment:

Page 3, 2nd Paragraph, 1st Bullet. Conducting a geophysical survey is a good method for better understanding the subsurface lithologies at the Site. However, it is unclear why only the northern portion of the Site will be evaluated. The survey area should be extended further south, to include the area in which the old galvanizing facility was located.

Response:

As noted above the geophysical survey will not be expanded. The geophysical evaluation is being performed in the areas downgradient from the former lagoons, source area, for OU2. The purpose of the geophysical survey is to evaluate the thickness of the Hawthorn and confirm a separation between the impacted aquifer and the Floridan Aquifer in the full-scale remediation area.

Comment:

Page 3, 2nd Paragraph, 2nd Bullet. The statement was made that "a hydraulic gradient promoting groundwater discharging to surface water" was implied by groundwater level data. We agree with this conclusion (in the vicinity of the wetlands), and recommend that a more extensive evaluation be performed.

Response:

As documented in the PDWP, a more extensive evaluation pertaining to the interaction of surface water and groundwater will be performed.

Comment:

Page 4, 2nd Bullet. As noted above, we recommend that hydrogeological and geochemical data be collected across the entire Site in order to: evaluate vertical gradients within the saturated zone, contaminant mass within the saturated zone soils, contaminant migrations routes, and groundwater-surface water interactions. The scope of work presented in the Work Plan is only a small fraction of the total evaluation that typically is performed when designing a remedial system for a contaminated site. Design and implementation of remedial strategy without a complete understanding of a site's characteristics is the primary reason that many remediation systems fail to perform adequately.

Response:

As documented in the PDWP, a hydrogeological investigation including all site wells will be performed. As defined in the OU2 ROD, the focus of the remediation is the source area, which consists of the former lagoons and areas downgradient.

Comment:

Appendix A, Page 4. IG agrees that the Site has not been adequately characterized. In addition, as discussed in Comment #1, we recommend that Reeves remove all unsubstantiated claims about IG from the report text. To continue to blame IG in this way is misleading and diverts attention from the need to better characterize the Site.

Response:

As documented in this letter, IG continues to discharge to surface water exceeding the stormwater discharge standards, which ultimately contributes to Site contamination. IG's continued effort to mislead the State regarding its ongoing contaminant contribution to the Site merely places the attention back on its operations as to why it cannot comply with its NPDES permit.

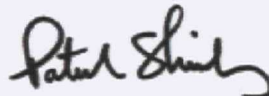
Please call me with any questions at 864.987.3909.

Sincerely,

ARCADIS U.S., Inc.



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